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Appl. No. : 10/696,671
Applicant : Ivarie et al
Filed : October 28, 2003
Title : NOVEL VECTORS IN AVIAN TRANSGENESIS

TC/A.U. : 1633
Examiner : Kaushal, Sumesh

Docket No. : AVI-000CON

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria VA 22313-1450 or facsimile transmitted to the U.S. Patent and Trademark Office on or before:

Date Sept 18, 2006
Signature [Handwritten Signature]
Name Lyle Resland

Honorable Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION OF DR. ANN M. GIBBINS PURSUANT TO 37 CFR 1.132

(GIBBINS DECLARATION)

Sir:

I, Dr. Ann M. Gibbins, hereby declare as follows:

1. I am skilled in the art of the field of the invention. In particular, I was a practicing research scientist in the field of poultry molecular biology from 1979 until 2004, encompassing the time of the filing of US Patent No. 5,162,215 (hereafter the "Bosselman Patent"). My professional experience, educational background and list of publications are detailed in attached Exhibit A.

2. I have reviewed the Bosselman Patent and I have knowledge of the technology described in the patent.

3. I understand that in an Office action pertaining to the subject patent application the Examiner has indicated that the Bosselman Patent teaches the transfer of nucleic acid sequences encoding desirable protein products to make transgenic chickens wherein eggs of the transgenic chickens contain the encoded desirable protein products.

4. Heterologous protein deposition into transgenic chicken eggs would have been considered a most significant accomplishment at the time of filing the Bosselman Patent. Pursuit of this type of protein engineering was very much at the forefront of avian transgenesis research in the 1980s and into the 1990s. In fact, the idea of producing heterologous proteins such as pharmaceutical proteins in the eggs of transgenic chickens was not suggested for the first time in the Bosselman Patent. See, for example, the last sentence of the Summary of my paper presented at The Thirty-Seventh Annual National Breeders Roundtable, dated May 5, 1988, entitled Gene Constructs for Testing Transgenic Poultry, and also the full paragraph on page 19 of this paper where a general design for the production of heterologous proteins in transgenic chicken eggs is discussed. Similar material was presented by me or my graduate students at other scientific meetings in Japan, England and Canada, prior to Sept. 22 1988.

5. I believe that had evidence been produced by Bossleman and colleagues indicating the presence of heterologous protein in the eggs of transgenic chickens, this information would have been described thoroughly in the Bosselman Patent due to the great importance of such a scientific breakthrough in 1988. In fact, the Patent shows no evidence of heterologous protein product being present in transgenic chicken eggs; moreover, it is not correct to extrapolate that because a heterologous protein is present in the chicken serum it would also be present in the eggs of the bird.

6. The deposition of proteins into eggs is not universal or automatic and depends on many factors. For example, in deposition in the egg yolk specific carrier

molecules and receptors are typically required that can bind to and shuttle the transported proteins into the growing ovum. Deposition into egg white requires among other things the heterologous gene expression being under the control of functional gene expression regulating elements that provide for expression in oviduct tissue, specifically in tubular gland cells. The Bosselman Patent does not postulate initial deposition of heterologous proteins by either route and provides no evidence from their work of heterologous protein being present in any portion of the egg.

7. Based upon my own professional experience and knowledge, obtaining heterologous protein in the egg of a chicken is a complex task and such an accomplishment cannot be taken as fact without supporting data. Further, I am unaware of any work pre-dating October 18, 1998 (filing date for US Patent No. 6,730,882) that led to the deposition of heterologous protein in the egg of a transgenic avian.

8. I believe that if researchers were able to show production of a heterologous protein in the serum of transgenic chickens by western blot and/or radioimmunoassay, as was the case in the Bosselman Patent, little additional effort would have been required to test the contents of the transgenic chicken eggs for the presence of the same heterologous protein.

9. I believe that without evidence to the contrary, there is no reason to believe the transgenic chickens described in the Bosselman Patent produced any detectable level of heterologous protein packaged into eggs.

10. I hereby further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both under

section 1001 of title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Signed Ann M. Gibbins
Ann M. Gibbins, Ph.D.

Dated September 11, 2006

EXHIBIT A

DR. ANN M. (VERRINDER) GIBBINS
Department of Animal and Poultry Science,
University of Guelph,
Guelph, Ontario, Canada, N1G 2W1.

Home address:
P.O. Box 419,
Rockwood, Ontario, Canada. N0B 2K0.

EDUCATION

First Class Honours degree in Biochemistry, 1960.
University of Birmingham, England.

M.Sc. degree in Microbiology, 1971.
University of Guelph, Ontario.
"Relatedness among *Rhizobium* and *Agrobacterium* species determined by three methods of nucleic acid hybridization."

Ph.D. degree in Genetics, 1980.
University of Guelph, Ontario.
"DNA polymerase in meiosis and genetic recombination in the basidiomycete *Coprinus cinereus*."

EMPLOYMENT

1961	Personal assistant to the Research Development Director, Cadbury Bros. Ltd., Bournville, England, for one year.
1962-68	Abstracted scientific articles (in English, Russian, and French) for Chemical Abstracts and for International Abstracts of Biological Sciences.
1964-67	The Adult Education Officer of Nelson Province for the Department of Extension Education, Victoria University of New Zealand.
1968-1978	Teaching assistant in the Departments of Microbiology, Chemistry, and Botany and Genetics, University of Guelph.
1978-79	Lecturer in the Department of Botany and Genetics, University of Guelph.
1979-80	Professional Associate in the Department of Biomedical Sciences, Ontario Veterinary College, University of Guelph.
1980-82	Assistant Professor (contractually limited to 2 years) in the Department of Biomedical Sciences, Ontario Veterinary College, University of Guelph.

1981-82	Concurrent with the above position, Assistant Professor in the Biology Department, Wilfred Laurier University, Waterloo, teaching Genetics.
1982-92	Awarded an NSERC University Research Fellowship for tenure in the Department of Biomedical Sciences, and then in the Department of Animal and Poultry Science, University of Guelph.
1986-94	Associate Professor, with tenure, Department of Animal and Poultry Science, Ontario Agricultural College, University of Guelph.
1986-94	Adjunct Professor, Department of Biomedical Sciences, Ontario Veterinary College, University of Guelph.
1994 to 2004	Professor, Department of Animal and Poultry Science, University of Guelph.
1994 to 2004	Chair, Department of Animal and Poultry Science, University of Guelph. Now Retired

AWARDS

1957.	Herefordshire Prize - highest academic award in the county (Great Britain) for grammar school students.
1959.	Faculty of Science Undergraduate Prize, University of Birmingham - top student in Faculty of Science.
1960.	Faculty of Science Undergraduate Prize, as above.
1960.	University of Birmingham Scholarship for studies towards a Ph.D. degree.
1976.	University of Guelph Graduate Research Scholarship, two semesters.
1976-8	Ontario Graduate Scholarship.
1982-92	Natural Sciences and Engineering Research Council of Canada (NSERC) University Research Fellowship.
2002	Presidential Distinguished Professor Award, University of Guelph.

PUBLICATIONS

Refereed Journals

Gibbins, Ann M., and K.F. Gregory. 1972. Relatedness among *Rhizobium* and *Agrobacterium* species determined by three methods of nucleic acid hybridization. *J. Bacteriol.* 111: 129-141.

Robinson, G.A., D.C. Wasnidge, F. Floto and A.M. Gibbins, 1981. ⁵³Gadolinium as a useful radiolanthanide for long-term labeling of tissues in Japanese quail. *Poultry Science* 60: 861-866.

- Gibbins, Ann M. Verrinder, F.R. van de Voort and R. Braham. 1981. Comparative study of three different forms of both native and subunit vitellogenin identified in quail plasma. *Comp. Biochem. Physiol.* 70B: 731-738.
- Gibbins, Ann M. Verrinder. 1982. A simple 'pulse-labelling' technique for applying chemicals to *Coprinus cinereus* cultures. *Trans. Brit. Mycol. Soc.* 78: 357-360.
- Gibbins, Ann M. Verrinder, and B.C. Lu. 1982. An ameiotic mutant of *Coprinus cinereus* halted prior to pre-meiotic S-phase. *Current Genetics* 5: 119-126.
- Gibbins, Ann M. Verrinder, and G.A. Templeton. 1982. An immunological study of the diverse forms of vitellogenin identified in quail plasma. *Poultry Science* 61: 524-530.
- Gibbins, Ann M. Verrinder, and G.A. Robinson. 1982. A comparison of diethylstilbestrol- and estradiol-17B-induced vitellogenesis in quail. *Poultry Science* 61: 1188-1193.
- Gibbins, Ann M. Verrinder, and G.A. Robinson. 1982. Comparative study of the physiology of vitellogenesis in Japanese quail. *Comp. Biochem. Physiol.* 72A: 149-155.
- Robinson, G.A., and A.M. Verrinder Gibbins. 1984. Induction of vitellogenesis in Japanese quail as a sensitive indicator of the estrogen-mimetic effect of a variety of environmental contaminants. *Poultry Science* 63: 1529-1536.
- Gibbins, Ann M. Verrinder, and B.C. Lu. 1984. Induction of normal fruiting on originally monokaryotic cultures of *Coprinus cinereus*. *Trans. Br. Mycol. Soc.* 82: 191-195.
- Robinson, G.A., and A.M. Verrinder Gibbins. 1985. Increased clearance rate of plasma thyroxine accompanies estradiol-induced vitellogenesis in male Japanese quail. *Poultry Science* 64: 2397-2399.
- Robinson, Mary E., Ann M. Verrinder Gibbins and Margaret H. Hardy. 1988. Normal levels of Vitamin A in tissues of the Syrian hamster (*Mesocricetus auratus*) determined colorimetrically. *Laboratory Animals* 22: 117-121.
- Rozon, D.K., W.H. Harris and A.M. Verrinder Gibbins. 1989. Uncoupling protein and its mRNA in brown adipose tissue of newborn rabbits. *Can. J. Physiol. Pharmacol.* 67: 54-58.
- Copeland, Karen F.T., and Ann M. Verrinder Gibbins. 1989. Demethylation of the gene expressing a yolk protein precursor in quail. *Poultry Sci.* 68: 1678-1687.
- Petitte, J.N., M.E. Clark, G. Liu, A.M. Verrinder Gibbins and R.J. Etches. 1990. Production of somatic and germline chimeras in the chicken by transfer of early blastodermal cells. *Development* 108: 185-189.
- Robinson, Mary E., Ann M. Verrinder Gibbins and Margaret H. Hardy. 1990. Persistence of added retinoids in organ culture media during induction of mucous metaplasia and glandular morphogenesis in hamster cheek pouches. *Experientia* 46: 513-517.
- Kennedy, B.W., A.M. Verrinder Gibbins, J.P. Gibson and C. Smith. 1990. Coalescence of molecular and quantitative genetics for livestock improvement. *J. Dairy Sci.* 73: 2619-2627.
- Javorsky, Peter, Song F. Lee, Ann M. Verrinder Gibbins and Cecil W. Forsberg. 1990. Extracellular β -galactosidase activity of a *Fibrobacter succinogenes* S85 mutant able to catabolize lactose. *Appl. Environ. Microbiol.* 56: 3657-3663.

- Van Vliet, R.A.C., J.S. Walton, A.G. Wildeman, K.J. Betteridge and Ann M. Verrinder Gibbins. 1991. Absence of oxytocin-neurophysin messenger RNA in the day-18 bovine conceptus. *J. Reprod. Fert.* 91: 73-79.
- Brazolot, C.L., J.N. Petite, R.J. Etches and A.M. Verrinder Gibbins. 1991. Efficient transfection of chicken cells by lipofection, and introduction of transfected blastodermal cells into the embryo. *Mol. Reprod. Devel.* 30: 304-312.
- Matte, Allan, Cecil W. Forsberg and Ann M. Verrinder Gibbins. 1992. Enzymes associated with metabolism of xylose and other pentoses by *Prevotella (Bacteroides) ruminicola* strains, *Selenomonas ruminantium* D and *Fibrobacter succinogenes* S85. *Canad. J. Microbiol.* 38: 370-376.
- Lee, Song F., Cecil W. Forsberg and A.M. Gibbins. 1992. Type II DNA restriction-modification system and an endonuclease from the ruminal bacterium *Fibrobacter succinogenes* S85. *J. Bacteriol.* 174: 5275-5283.
- Shaw, Deborah L., R. Stuart Carsience, Robert J. Etches and Ann M. Verrinder Gibbins. 1992. The fate of female donor blastodermal cells in male chimeric chickens. *Biochem. Cell Biol.* 70:1218-1229.
- Carsience, R. Stuart, Mary Ellen Clark, Ann M. Verrinder Gibbins and Robert J. Etches. 1993. Germline chimeric chickens from dispersed donor blastodermal cells and compromised recipient embryos. *Development* 117:669-675.
- Etches, R.J., R.S. Carsience, M.E. Clark, R.A. Fraser, A. Toner and A.M. Verrinder Gibbins. 1993. Chimeric chickens and their use in manipulation of the chicken genome. *Poultry Sci.* 72:882-889.
- Hillel, J., A.M. Verrinder Gibbins, R.J. Etches and D. McQ. Shaver. 1993. Strategies for the rapid introgression of a specific genetic modification into a commercial poultry flock from a single carrier. *Poultry Science* 72: 1197-1211.
- Fraser, Robert A., R. Stuart Carsience, Mary Ellen Clark, Robert J. Etches and Ann M. Verrinder Gibbins. 1993. Efficient incorporation of transfected blastodermal cells into chimeric chicken embryos. *Int. J. Dev. Biol.* 37:381-385.
- Brazolot Millan, Cynthia L., and Ann M. Verrinder Gibbins. 1994. Lack of excision of introns from primary transcripts of certain vitellogenin II minigenes. *Biochem. Cell Biol.* 72: 84-94.
- Etches, R.J., and A.M. Verrinder Gibbins. 1994. Gene transfer: overcoming the avian problems. *5th. World Congress on Genetics Applied to Livestock Production* 20: 97-101.
- Gibbins, Ann M. Verrinder. 1994. Gene Expression. *5th. World Congress on Genetics Applied to Livestock Production* 21: 305-306.
- Kagami, H., M.E. Clark, A.M. Verrinder Gibbins, and R.J. Etches. 1995. Sexual differentiation of chimeric chickens containing ZZ and ZW cells in the germline. *Molecular Reproduction and Development* 42: 379-387.
- Etches, Robert J., Mary Ellen Clark, Ann Toner, Guodong Liu and Ann M. Verrinder Gibbins. 1996. Contributions to somatic and germline lineages of chicken blastodermal cells maintained in culture. *Molecular Reproduction and Development* 45:291-298.
- Zimmer, R., W. Allan King and Ann M. Verrinder Gibbins. 1997. Generation of chicken Z-chromosome painting probes by microdissection for screening large-insert genomic libraries. *Cytogenetics and Cell Genetics* 78:124-130.

Zimmer, R., and Ann M. Verrinder Gibbins. 1997. Construction and characterization of a large-fragment chicken bacterial artificial chromosome library. *Genomics* 42:217-226.

Etches, Robert J., Mary Ellen Clark, Laura Zajchowski, Gordon Speksnijder, Ann M. Verrinder Gibbins, Katsutoshi Kino, Bertrand Pain and Jaques Samarut. 1997. Manipulation of blastodermal cells. *Poultry Science* 76:1075-1083. (By invitation to RJE and AMG).

Zimmer, Regis, Alon Haberfeld and Ann M. Verrinder Gibbins. 1997. Microisolation of the chicken Z chromosome and construction of microclone libraries. *Genome* 40:865-872.

Gibbins, Ann M. Verrinder. 1998. The chicken, the egg, and the ancient mariner. *Nature Biotechnology* 16:1013-1014.

Gibbins, Ann M. 1998. Transgenic poultry technology and food production. *Animal Biotechnology* 9:173-179.

Speksnijder, G.J., R.J. Etches and A.M. Verrinder Gibbins. 1999. Germline chimeric chickens from FACS-sorted donor cells. *Molecular Reproduction and Development* 52:33-42.

Soodeen-Karamath, Sharon, and Ann M. Verrinder Gibbins. 2000. The chicken *stathmin* gene and its expression in the embryo. *Biochemistry and Cell Biology* 78:703-713.

Soodeen-Karamath, Sharon, and Ann M. Verrinder Gibbins. 2001. Apparent absence of *oct 3/4* from the chicken genome. *Molecular Reproduction and Development* 58:137-148.

Otieno, C.J., C.M. Wood, S.K. Tallam, A.M. Verrinder Gibbins and J.S. Walton. 2002. Expression of luteinizing hormone genes in bovine conceptuses. *Reproduction* 123:155-162

Jiang, Zhihua, Hong He, Noriyuki Hamasima, Hideaki Suzuki and Ann M. Verrinder Gibbins. 2002. Comparative mapping of *Homo sapiens* chromosome 4 (HSA4) and *Sus scrofa* chromosome 8 (SSC8) using orthologous genes representing different cytogenetic bands as landmarks. *Genome* 45:147-156.

Jiang, Zhihua, Jenna S. Melville, Honghe Cao, Sudhir Kumar, Alan Filipinski and Ann M. Verrinder Gibbins. 2002. Measuring conservation of contiguous sets of autosomal markers on bovine and porcine genomes in relation to the map of the human genome. *Genome* 45:769-776.

Lampard, Gregory R., and Ann M. Verrinder Gibbins. 2002. Secretion of foreign proteins mediated by chicken lysozyme gene sequences. *Biochemistry and Cell Biology* 80:777-788.

Jun, Hyun S., Jong K. Ha, Laercio M. Malburg, Jr., Ann M. Verrinder Gibbins and Cecil W. Forsberg. 2003. Characteristics of a cluster of xylanase genes in *Fibrobacter succinogenes* S85. *Can. J. Microbiol.* 49: 171-180.

Cao, H., J.A.B. Robinson, Z. Jiang, J.S. Melville, S.P. Golovan, M.W. Jones and A.M. Verrinder Gibbins. 2004. A high-resolution radiation hybrid map of porcine chromosome 6. *Animal Genetics* 35: 367-378.

Losos, Jan K., David H. Evans and Ann M. Verrinder Gibbins. 2005. Targeted modification of the complete chicken lysozyme gene by poxvirus-mediated recombination. *Biochem. Cell Biol.* 83: 230-238.

Shimizu, Mamiko, Jan K. Losos and Ann M. Verrinder Gibbins. 2005. Analysis of an approach to oviduct-specific expression of modified chicken lysozyme genes. *Biochemistry and Cell Biology* 83: 49-60.

Jun, Hyun S., Ann M. Verrinder Gibbins and Cecil W. Forsberg. 2006. Cloning and expression of the *Fibrobacter succinogenes* C1 pilin protein.

Other Refereed Contributions

Review Articles

Muysson, David J., and Ann M. Verrinder Gibbins, 1989. The alteration of milk content by genetic engineering and recombinant DNA-mediated selection techniques. *Can. J. Anim. Sci.* **69**: 517-527.

Van Vliet, Renata A., Ann M. Verrinder Gibbins and John S. Walton, 1989. Livestock embryo sexing: a review of current methods, with emphasis on Y-specific probes. *Theriogenology* **32**: 421-438.

Gibbins, Ann M. Verrinder. 1989. Manipulation of avian genomes. Resume of a workshop held at the XVth Int. Cong. Genetics, Toronto, August, 1988, organized by Gibbins. *Genome* **31**: 456-457.

Stelwagen, Kerst, Ann M. Verrinder Gibbins and Brian W. McBride. 1992. Applications of recombinant DNA technology to improve milk production: a review. *Livest. Prod. Sci.* **31**: 153-178.

Gibbins, Ann M. Verrinder, and W. Douglas Morrison. 1994. Cows as big as elephants? The continuing debate about genetic technology. *J. Agricult. Environ. Ethics* **7**: 126-131.

Book Chapter, Books

R.J. Etches, J.N. Pettite, A.M. Verrinder Gibbins, C.L. Brazolot and G. Liu. 1990. Production of chimeric chicks by blastodermal stem cell transfer and the prospects for gene manipulation. In: *Avian Incubation and Physiology*. Ed. S. Tullett. Chapter 22, pp. 305-309.

Gibbins, Ann M. Verrinder. 1993. Future interactions between molecular biologists and the poultry industry, illustrated by a comparison of the genome mapping and gene targeting paradigms. In: *Manipulation of the Avian Genome*. Eds. Robert J. Etches and Ann M. Verrinder Gibbins. Chapter 19, pp. 285-309. CRC Press, Boca Raton.

Pettite, James N., Cynthia L. Brazolot, Mary Ellen Clark, Guodong Liu, Ann M. Verrinder Gibbins and Robert J. Etches. 1993. Accessing the genome using germline chimeras in the chicken. In: *Manipulation of the Avian Genome*. Eds. Robert J. Etches and Ann M. Verrinder Gibbins. Chapter 6, pp. 81-101. CRC Press, Boca Raton.

Etches, Robert J., and Ann M. Verrinder Gibbins, editors (equal contribution). 1993. *Manipulation of the Avian Genome*. CRC Press, Boca Raton. 352 pp.

Etches, R.J., R.S. Carsience, M.E. Clark, R.A. Fraser, A. Toner, D.L. Shaw and A.M. Verrinder Gibbins. 1993. Novel approaches to studies of avian endocrinology using transgenic chickens produced via chimeric intermediates. In: *Avian Endocrinology*. Ed. P.J. Sharp, pp 381-396.

Etches, R.J., T.M. John and A.M. Verrinder Gibbins. 1995. Behavioral, physiological, neuroendocrine and molecular responses to heat stress. In: *Poultry Production in Hot Climates*. Ed. N.J. Daghir. Chapter 3, pp. 31-65. C.A.B. International, Wallingford, U.K.

Etches, R.J., and A.M. Verrinder Gibbins. 1997. Strategies for the production of transgenic chickens. In: *Methods in Molecular Biology*, vol. 62. *Recombinant Gene Expression Protocols*. Ed. R.S. Tuan, pp. 433-450. Humana Press, Totawa, N.J.

Etches, R.J., M.E. Clark, A.M. Verrinder Gibbins and M.B. Cochran. 1997. Production of chimeric chickens as intermediates for gene transfer. In: *Transgenic animals: generation and use*. Ed. L.M. Houdebine, pp. 75-82. Harwood Academic Publishers, The Netherlands.

Gibbins, Ann M. Verrinder, and Jan Losos. 1997. Exploring product possibilities arising from transgenic poultry technology. In: *Transgenic Animals and Food Production*. Kgl. Skogs- o. Lantbr. Akad. Tidskr. Volume 136, pp. 57-68. The Royal Swedish Academy of Agriculture and Forestry, Stockholm. (This publication was later made available on the Internet by the Swedish authorities.)

Gibbins, A.M. Verrinder, S. Soodeen-Karamath, J. Losos and R. Zimmer. 1997. Targeted manipulation of the avian genome. In: *Animal Biotechnology*. Eds. Li Ning and Yongfu Chen, pp. 27-30. International Academic Publishers, Beijing, China.

Invited Conference Presentations

Gibbins, Ann M. *Genetic manipulation of mammalian embryos*. Second Symposium on Genetics and Animal Reproduction, OVC, University of Guelph, 1984.

Gibbins, Ann M. *Vaccines through recombinant DNA*. NRC Biotechnology Course, University of Guelph (3 times), 1985.

Gibbins, Ann M. *DNA and RNA probes as novel diagnostic agents*. NRC Biotechnology Course, University of Guelph (twice), 1986.

Gibbins, Ann M. *Realistic opportunities with biotechnology*. CAAB Sire Analyst Workshop, Ste. Hyacinthe, Quebec, September 1987.

Gibbins, Ann M. *Dynamic DNA*. The Science Teachers' Association of Ontario 9th. Biennial Conference, Toronto, November, 1987.

Gibbins, Ann M. *What is a gene? A dilemma in the design of transgenic animals*. Canadian Animal Geneticists Workshop, University of Western Ontario, 1987.

Gibbins, Ann M. *Gene constructs for testing transgenic poultry*. Thirty-Seventh Annual National Breeders' Roundtable, St. Louis, May, 1988.

Gibbins, Ann M. *Future research and developments in animal biotechnology*. 1988. O.A.C. Bankers' School, University of Guelph, June, 1988.

Gibbins, Ann M. (birds) *Overview of the present state of research: where the action is in molecular genetics applied to animal production*. Short Course on Molecular Genetics Applied to Animal Breeding and Production, organized by the National Research Council, held at Guelph, July, 1988.

Gibbins, Ann M. Verrinder. *Mapping and characterizing DNA loci involved in reproductive failure*. Satellite Symposium (Int. Cong. Genetics, Toronto, 1988), Aberrant genes and chromosomes in the etiology of reproductive problems. Guelph, August, 1988.

Gibbins, Ann M. *Transgenic poultry*. UCLA Symposium: Transgenic models in medicine and agriculture. Taos, NM, January, 1989.

C.W. Forsberg, M. McGavin, L. Huang, J. Gong, K. McDermid, A. Matte and A.M. Gibbins. Mechanism of plant cell wall digestion by cellulolytic bacteria. A search for enzymes and genes. OECD/INRA Workshop: Cell walls: structure, biodegradation, and utilisation. Nantes, France, July, 1989.

Brazolot, C.L., and A.M. Gibbins. *Gene manipulation in poultry*. Canadian Animal Genetics Workshop, Montreal, July, 1989.

Gibbins, Ann M. *The value of transgenic animals to medicine, agriculture and biology*. Int. Conference - Science Teaching = Canada's Future (STAO/APSQ, CASE/UNESCO), Ottawa, October, 1989.

Forsberg, C.W., A.M. Gibbins, J. Gong, S.F. Lee, L. Malburg, A. Matte, D. Smith, J. Tamblyn and P. Wang. *Molecular aspects of fibre digestion by rumen microorganisms*. Proc. of Expert Committee on Animal Nutrition, Montreal, June, 1990. Invited.

Gibbins, A.M. Verrinder, C.L. Brazolot, J.N. Petitte, G. Liu and R.J. Etches. *Efficient transfection of chicken blastodermal cells and their incorporation into recipient embryos to produce chimeric chicks*. 4th World Congress on Genetics Applied to Livestock Production, Edinburgh, July, 1990.

Gibbins, Ann M. *Journey to the interior - the expedition to map genetic material*. The Science Teachers' Association of Ontario Student Conference, Toronto, November, 1990.

Gibbins, Ann M. *DNA fingerprinting in poultry*. DNA fingerprinting and mapping workshop, jointly organized by the Plant and Animal Research Centres, Agriculture Canada, Ottawa, February, 1991.

Gibbins, Ann M. *Future interactions between molecular biologists and the poultry industry*. Keystone Symposium: Manipulation of the avian genome. Lake Tahoe, Calif., March, 1991. J. Cell. Biochem. Suppl. 15E, CL019, 1991.

Petitte, James N., Cynthia L. Brazolot, Mary E. Clark, Guodong Liu, Deborah L. Shaw, Ann M. Verrinder Gibbins and Robert J. Etches. *Accessing the genome using germline chimeras in the chicken*. Keystone Symposium: Manipulation of the avian genome. Lake Tahoe, Calif., March, 1991. J. Cell. Biochem. Suppl. 15E, CL 007, 1991.

Gibbins, Ann M. Chair of colloquium, "Transgenic chickens", and presented "*The unique nature of transgenic strategies in birds*". Sponsored by the Poultry Science Association at the FASEB meeting, Atlanta, GA, April, 1991.

Gibbins, Ann M. The application of nucleic acid probes to animal breeding. Annual convention of the Canadian Association of Animal Breeders, Niagara-on-the-Lake, September, 1991.

Gibbins, Ann M. Co-organizer with Dr. Fatima Bosch of a workshop on "Manipulation of the Avian Genome" at the University of Barcelona, Spain, November, 1991. Presented "*The unique nature of transgenic strategies in birds*".

Gibbins, Ann M. Chair of session "Genetics and quality of broiler and egg production" and presented "*The production of novel products from eggs by genetic engineering*", XIX World's Poultry Congress, Amsterdam, The Netherlands, September, 1992.

Gibbins, Ann M. *Why don't roosters lay eggs?* The Science Teachers' Association of Ontario Conference, Toronto, November, 1992.

Gibbins, Ann M. One of four speakers at the BioAg Symposium, "The Genetic Revolution", Brigham Young University, Provo, Utah. Presented: *Genetic engineering and animal agriculture*. March, 1993.

Gibbins, Ann M. Speaker and panelist for the meeting: "Are Genetically Engineered Foods Good For You?", presenting the academic perspective. Organised by the Toronto Biotechnology Initiative in association with the Ontario Science Centre, Toronto, Ontario, April, 1993.

Gibbins, Ann M. Organiser (by invitation) of the 4th. Workshop of the Canadian Animal Production Biotechnology Network (BIOZOOTECH, government funded), Guelph, Ontario, November, 1993.

Gibbins, Ann M. Speaker and panelist for the session "Biotechnology and Its Application to Agriculture" at the Annual Conference of the O.I.A., Burlington, Ontario, March, 1994. Presented *"Biotechnology - Application in Animal Agriculture"*.

Gibbins, Ann M. Invited speaker at the Agricultural/Food/Veterinary Network satellite event at Guelph of the 8th. Int. Biotechnology Conference (held in Toronto), May, 1994. Presented *"Biotechnology - Application in Animal Agriculture"* (mainly poultry research).

Gibbins, Ann M. Chair of session "Gene Expression" at the 5th. World Congress on Genetics Applied to Livestock Production, Guelph, Ontario, August, 1994.

Gibbins, Ann M. Invited participant in the workshop "Agricultural Ethics Development" (organized by OAC and the Faith and Agriculture Committee), University of Guelph, December, 1994.

Gibbins, Ann M. Invited speaker at the College Royal Lecture Series, University of Guelph, March, 1995: *"Animals that James Herriot never dreamed about!"*.

Gibbins, Ann M. Invited speaker and panelist (and acted as an advisor for the animal sections and organized all filming at the University of Guelph), 9th. Int. Biotechnology Conference (held in San Francisco), May, 1995. Satellite linkage, live broadcast between Toronto and San Francisco. Filmed jointly by TVOntario and PBS; also used for subsequent broadcasting by both organisations, and for distance education.

Gibbins, Ann M. Invited speaker at the New Brunswick Federation of Agriculture conference, Biotechnology - Farming Food for the Future, Fredericton, N.B., June, 1995: *"Animal biotechnology - past, present and future"*.

Gibbins, Ann M. WPSA Guest Speaker: *"Poultry Science - the next generation: to boldly go?"* Poultry Science of America Annual Meeting, Edmonton, Alberta, August, 1995.

Gibbins, Ann M. Co-chair of Roundtable Discussion: Interventions in Embryo Development, Current Advances in Avian Embryology and Incubation Symposium, Poultry Science Association of America Annual Meeting, Edmonton, Alberta, August, 1995.

Gibbins, Ann M. Invited speaker at the Guelph-Wellington Men's Club, October, 1995: *"Ethics and biotechnology"*.

Gibbins, Ann M. Invited speaker at the NRC VIIth. Industrial Biotechnology Conference, Biotechnology: Towards a Renewed Economy, Montreal, P.Q., December, 1995: *"Biotechnology in animal production"*.

Gibbins, Ann M. Invited speaker at the 17th. Annual Conference of the Ontario Home Economics Association, Riding the Wave of Technology, Guelph, Ontario, April, 1996: *"Biotechnology"*.

Etches, R.J. and A.M. Verrinder Gibbins. *Blastodermal cell manipulation*. In the symposium, Genetic Selection - Strategies for the Future, at the Poultry Science Association Annual meeting, Louisville, Kentucky, July, 1996.

Gibbins, Ann M. Invited to present several research seminars and extension seminars on transgenic poultry, and to give a short course (one week) on Applications of Recombinant DNA Technology to Animal Science, at the Universidade Estadual Paulista (UNESP), Campus de Jaboticabal, Brasil, October, 1996.

Gibbins, Ann M. Invited speaker at the Ontario Institute of Agrologists Professional Development meeting (Current Issues in Animal Agriculture in Ontario), Guelph, Ontario, November, 1996: *"Animal Research, the new realities - who will set research priorities, who will fund research needs?"*

Gibbins, Ann M. Invited speaker at the International Plant & Animal Genome V Conference (PAGV), San Diego, California, January, 1997: *"A framework for gene targeting in poultry"*.

Gibbins, Ann M. Invited speaker at the Guelph Food Technology Centre (GFTC) workshop: Expanding the Egg Horizon: Egg Component and Ingredient Use - Technical and Marketing Opportunities. Mississauga, February, 1997: *"Novel egg products through genetic engineering"*.

Gibbins, Ann M. Invited speaker at the International Workshop on Transgenic Animals and Food Production, Stockholm, Sweden, May, 1997: *"Exploring the product possibilities arising from transgenic poultry technology"*.

Gibbins, Ann M. Invited speaker at the International Conference on Animal Biotechnology, Beijing, China, June, 1997: *"Targeted manipulation of the avian genome"*.

Gibbins, Ann M. Invited speaker at the UC Davis Biotechnology Program Conference: Transgenic Animals in Agriculture, Tahoe City, California, August, 1997: *"Blastodermal chimeras as a route to transgenic chickens"*.

Gibbins, Ann M. Invited speaker at the International Egg Commission Conference, Toronto, September, 1997: *"Genetically-engineered poultry"*.

Gibbins, Ann M. Invited speaker at the 1997 National 4-H Conference, Agriculture Focusing on the Future, Guelph, November, 1997: *"Application of genetic engineering to animal production systems"*.

Gibbins, Ann M. Invited speaker at Third Age Learning - Guelph, Fall Series, Guelph, November, 1997: *Designer genes, made to measure"*.

Gibbins, Ann M. Invited speaker at the 2nd. International Symposium on Egg Nutrition and Newly Emerging Ovo-biotechnologies, Banff, Alberta, April, 1998: *"The potential for manipulating the composition of eggs by genetic engineering"*.

Gibbins, Ann M. Invited speaker at the symposium Transgenic Animals & Food Production, at the Food Animal Biotechnology Center (FAB), University of Minnesota, St. Paul, MN, June 26, 1998: *"Transgenic poultry technology and food production"*.

Gibbins, Ann M. Invited speaker at the EuroTier '98 International Congress for Veterinarians and Farmers, Hanover, Germany, November 10-12, 1998: *"The potential for developments in the poultry industry through*

the use of genetic engineering". Published in *Quality assurance and animal health management on the farm*. Ed. R. Schmidt, pp.45-52. DLG-Verlags-GmbH, Frankfurt am Main. 1998.

Gibbins, Ann M. Invited speaker at the Future Vets Club, OVC, University of Guelph, January 19, 1999: "*The impact of molecular genetics research on the veterinary profession*".

Gibbins, Ann M. Invited participant (one of four) in the 25th anniversary of the CBC radio program *Quirks and Quarks* (we were asked to predict the state of affairs in our fields in 25 years' time), Toronto, Ontario, October, 2000.

Gibbins, Ann M. Invited speaker at the Science Teachers' Association of Ontario STAO 2000 Conference, Toronto, Ontario, November, 2000: "*Transgenic animals and societal concerns*".

Gibbins, Ann M. Invited to conduct a 3-hr. session in the Science, Technology and Public Policy program, McMaster University, February, 2001: "*Transgenic animals and societal opinion*".

Gibbins, Ann M. Invited speaker in the Third Age Learning series, Arboretum Centre, Guelph, February, 2001: "*Genetically-manipulated animals: the trail-blazers*".

Gibbins, Ann M. Invited speaker in the program for CASE Media Fellows, Next Generation Biotechnology: Benefits to Human Health, University of Guelph, March 2001: "*The incrEDIBLE egg*".

Gibbins, Ann M. Invited participant (one of four) in the Genomics and Human Health Symposium, Health Canada, Ottawa, March, 2001: "*Animal genomics and human health*".

Gibbins, Ann M. Invited speaker at Village by the Arboretum seminar series, Guelph, March, 2001: "*Transgenic animals*".

Gibbins, Ann M. Gave a presentation in the Kennedy Memorial Colloquium, University of Guelph, May 2001: "*Chicken transgenesis and modification of the lysozyme gene*".

Gibbins, Ann M. Gave a presentation in the Poultry Program Research Update, Arboretum Centre, Guelph, June 2001: "*Chicken transgenesis and the lysozyme gene*".

Gibbins, Ann M. Gave a presentation and was involved in a panel discussion, Issues in Animal Biotechnology, for the Animal Science Society meeting, University of Guelph, September, 2001.

Gibbins, Ann M. Invited to give a presentation in the Erin Lecture Series (for retired persons), November 15, 2001: "*Transgenic animals*".

Gibbins, Ann M. Invited to give a presentation in the Poultry Genomics/Transgenics workshop at the Plant, Animal and Microbe Genomes X conference, San Diego, January, 2002: "*Gene-targeting in avian transgenesis revisited*".

Gibbins, Ann M. Invited to give a presentation in the Ethics and Science Symposium at the 12th. International Conference of Women Engineers and Scientists, Ottawa, July, 2002: "*Transgenic animals - scientific and societal appraisal*".

Gibbins, Ann M. Invited to give a presentation at the Seventh Biennial Biotechnology Symposium (NIH Biotechnology Training Program), Advances in Cloning Biotechnology, Washington State University, Pullman, March, 2003: "*Avian transgenesis - approaches to gene targeting*".

Conference presentations

Gibbins, Ann M., and K.F. Gregory. Relatedness among *Rhizobium* and *Agrobacterium* species determined by three methods of nucleic acid hybridization. Canadian Society of Genetics Annual Meeting, Laval University, 1972.

Gibbins, Ann M. Verrinder, and G.A. Robinson. Estrogen-induced vitellogenesis in Japanese quail. 25th Annual Meeting of the Genetics Society of Canada, Guelph, June, 1980.

Gibbins, Ann M. Verrinder, and G.A. Robinson. Identification in quail plasma of three different forms of both native and subunit vitellogenin. Joint Meeting of the Genetics Society of America and the Genetics Society of Canada, North Carolina, June, 1981.

Gibbins, Ann M. Verrinder. Vitellogenesis in quail. "The Evolution of the Eukaryotic Genome and its Components", Dalhousie University, July, 1981.

Gibbins, Ann M. Verrinder. Relationships between diverse forms of vitellogenin and egg-yolk proteins in Japanese quail. Genetics 104: S27. "Evolution '83", a joint meeting of Genetics Society of America, Stadler Genetics Symposium, and American Society of Naturalists, St. Louis, Miss. June, 1983.

Gibbins, Ann M. Verrinder, G. Bharadwaj and G. Hlywka. Asynchronous production of two major vitellogenin proteins in the Japanese quail. Canadian Federation of Biological Societies (CFBS) Annual Meeting, Toronto, June, 1985.

Gibbins, Ann M. Verrinder, G. Bharadwaj and G. Hlywka. Characterization of vitellogenin mRNA species in the Japanese quail. Proc. 13th. Int. Congress Biochem., FR-111, August, 1985.

Robinson, M.E., M.H. Hardy and A.M.V. Gibbins. Decrease in retinoid levels in medium after organ culture. CFBS Annual Meeting. Guelph, June, 1986.

Gibbins, A.M. Verrinder, C.L. Brazolot and G.A. Robinson. Phosvitins in Japanese quail oocytes and eggs. CFBS Annual Meeting, Guelph, June, 1986.

Hlywka, G.N., and A.M. Verrinder Gibbins. Vitellogenin gene number in avian species. CFBS Annual Meeting. Guelph, June, 1986.

Gibbins, Ann M. Verrinder, Gwen N. Hlywka and Cynthia L. Brazolot. Comparative analysis of avian egg-yolk proteins and genes. Poultry Science Association Annual Meeting, North Carolina, August, 1986.

Campbell, Nancy L., Ann M. Verrinder Gibbins and Louise H. Ruhnke. Construction of diagnostic probes for *Ureaplasma* species implicated in bovine reproductive, urinary, and respiratory tract diseases. OVC Educational Meeting for Practitioners, University of Guelph, September, 1987.

Copeland, Karen F.T., Cynthia L. Brazolot and Ann M. Verrinder Gibbins. Expression of egg yolk protein precursor genes in poultry. Poultry Science Association Annual meeting, Oregon State University, August, 1987.

Campbell, N.L., A.M. Verrinder Gibbins and H.L. Ruhnke. A molecular genetic analysis of *Ureaplasma diversum* strains implicated in bovine reproductive, urinary, and respiratory tract diseases. 7th Int. Congress of Int. Organization for Mycoplasma, Vienna, June, 1988. Recent Advances in Mycoplasma, Suppl. 20, pp. 610-612, 1990. Gustav Fischer Verlag.

Copeland, Karen F.T., and Ann M. Verrinder Gibbins. DNA modifications related to egg yolk protein production in poultry. Poultry Science Association Annual Meeting, Baton Rouge, LA, July, 1988.

Campbell, N.L., and A.M. Verrinder Gibbins. A molecular genetic characterization of *Ureaplasma diversum* strains implicated as bovine pathogens. XVIth Int. Congress of Genetics, Toronto, August, 1988.

Copeland, K.F.T., and A.M. Verrinder Gibbins. Correlation of quail vitellogenin (Vg2) synthesis with transcription and demethylation of the gene. XVIth. Int. Congress of Genetics, Toronto, August, 1988.

Brazolot, Cynthia L., and Ann M. Verrinder Gibbins. Construction of a truncated egg yolk protein gene for testing transgenic systems in poultry. XVIII World's Poultry Congress, Japan, September, 1988.

Muysson, D.J., A.M. Verrinder Gibbins, C.W. Forsberg and P.J. Krell. Cloning of genes coding for D-xylose utilization in *Bacteroides ruminicola*. 1989 ASM Annual Meeting, New Orleans, May, 1989.

Campbell, N.L., A.M. Verrinder Gibbins and H.L. Ruhnke. Cloning and expression of genes from virulent and avirulent strains of the bovine pathogen, *Ureaplasma diversum*. 1989 American Society for Microbiology Annual Meeting, New Orleans, May, 1989.

Jones, M.E., Liu Guodong, A.M. Verrinder Gibbins and J.A. Mench. DNA fingerprinting analysis of behavioral correlates of male mating success in chickens. Poultry Science Association Annual Meeting, University of Wisconsin, Madison, July, 1989.

Van Vliet, R.A., A.M. Gibbins, M.L. Goodwin, K.J. Betteridge, A.G. Wildeman and J.S. Walton. Detection of messenger RNA for oxytocin and β -actin in bovine conceptuses on Day 18. Soc. for the Study of Reproduction, St. Louis, August, 1989.

Petitte, J.N., Liu Guodong, A.M. Verrinder Gibbins and R.J. Etches. Germ-line chimeras can be produced by embryonic stem cell transfer in the chicken. 11th International Congress of the International Society of Developmental Biologists, Utrecht, The Netherlands, August 1989. Cell Differentiation and Development 27, Supplement 1, S89, 1989.

Brazolot, C.L., J.N. Petite, R.J. Etches and A.M. Verrinder Gibbins. The establishment of efficient gene transfer and expression in chicken embryonic stem cells. 11th International Congress of the International Society of Developmental Biologists, Utrecht, The Netherlands, August 1989. Cell Differentiation and Development 27, Supplement 1, S90, 1989.

Javorsky, P., S.F. Lee, A.M. Gibbins and C.W. Forsberg. β -Galactosidase activity of *Fibrobacter succinogenes* S85. 20th Conference on Rumen Function, Chicago, November, 1989.

Brazolot, C.L., J.N. Petite, G. Liu, R.J. Etches and A.M. Verrinder Gibbins. Efficient transfection of chicken blastodermal cells by lipofection, and introduction of transfected cells into the embryo. Alberta Heritage Foundation for Medical Research Conference, Calgary, November, 1989.

Etches, R.J., J.N. Petite, M.E. Clark, C.L. Brazolot, G. Liu and A.M. Verrinder Gibbins. Isolation and transfection of dispersed blastodermal cells from unincubated chick embryos and their incorporation into recipient embryos. Canada West Society for Reproductive Biology, Vancouver, February, 1990.

Petitte, J.N., G. Liu, R.J. Etches and A.M. Verrinder Gibbins. Somatic and germline chimerism in the chicken and the approaches to the development of an avian embryonic stem cell line. 18th Annual Southern Ontario Reproductive Biology Workshop, Toronto, May, 1990.

Brazolot, C.L., J.N. Petite, R.J. Etches and A.M. Verrinder Gibbins. Efficient transfection of chicken blastodermal cells and their introduction into recipient chicken embryos. 18th Annual Southern Ontario Reproductive Biology Workshop, Toronto, May, 1990.

Javorsky, P., S.F. Lee, A.M. Gibbins and C.W. Forsberg. Lactose metabolism by *Fibrobacter succinogenes* S85. Can. Soc. of Microbiologists Annual Meeting, Calgary, June, 1990.

Lee, S.F., C.W. Forsberg and A.M. Gibbins. Expression of chloramphenicol acetyl transferase (CAT) from a promoter of *Fibrobacter succinogenes* S85. Canadian Society of Microbiologists Annual Meeting, Calgary, June, 1990.

Gibbins, Ann M. Verrinder, and Nancy L. Campbell. Analysis of clones expressing *Ureaplasma diversum* polypeptides in *Escherichia coli*. 8th Int. Congress of Int. Organization for Mycoplasmaology, Istanbul, Turkey, July, 1990.

Brazolot, Cynthia L., and Ann M. Verrinder Gibbins. Construction of a chicken vitellogenin minigene for the study of vitellogenin uptake by oocytes. Poultry Science Association Annual Meeting, Virginia, August, 1990.

Liu, G., J.N. Petite, R.J. Etches and A.M. Verrinder Gibbins. Use of DNA fingerprinting to assess somatic and germline chimerism following blastodermal cell transfer into chicken embryos. 1st Int. Conference on DNA fingerprinting, Berne, Switzerland, October, 1990.

Petite, J.N., C.L. Brazolot, R.J. Etches and A.M. Verrinder Gibbins. Lipofection of chicken blastodermal cells and introduction of transfected cells into the early embryo. Triangle Conference on Reproductive Biology, North Carolina, January, 1991.

Brazolot, Cynthia L., James N. Petite, Mary E. Clark, Robert J. Etches and Ann M. Verrinder Gibbins. Introduction of lipofected chicken blastodermal cells into the early chicken embryo. Keystone Symposium: Manipulation of the avian genome. Lake Tahoe, Calif., March, 1991.

Lee, S.F., C.W. Forsberg and A.M. Verrinder Gibbins. Restriction-modification system of *Fibrobacter succinogenes* S85. Canadian Society of Microbiologists Annual Meeting, London, June, 1991.

Etches, R.J., R.S. Carsience, D.L. Shaw and A.M. Verrinder Gibbins. Improved efficiency of incorporation of donor blastodermal cells in chimeric chickens and their detection using a female-specific DNA probe. 1992 Miami Bio/technology Winter Symposium. Advances in Gene Technology:Feeding the World in the 21st Century, p. 51. Eds, W.J. Whelan *et al.* January, 1992.

Toner, A., U. Vielkind, M.E. Clark, R.S. Carsience, A.M. Verrinder Gibbins and R.J. Etches. Characteristics of chicken blastodermal cells *in vitro*. 20th. Annual Southern Ontario Reproductive Biology Conference, London, May, 1992.

Fraser, R.A., R.S. Carsience, M.E. Clark, A.M. Verrinder Gibbins and R.J. Etches. Incorporation of transgenic cells into chimeric chick embryos. 20th. Annual Southern Ontario Reproductive Biology Conference, London, May, 1992.

Fraser, R.A., R.S. Carsience, M.E. Clark, R.J. Etches and A.M. Verrinder Gibbins. Incorporation of transfected blastodermal cells into chimeric chicken embryos. Vth. Int. Symposium on Avian Endocrinology, Edinburgh, Scotland, September, 1992.

- Kagami, Hiroshi, Mary Ellen Clark, Ann Toner, Ann M. Verrinder Gibbins and Robert J. Etches.** Interaction of donor cells and recipient embryos during sexual development of chimeric chickens. 8th. North American Colloquium on Domestic Animal Cytogenetics and Gene Mapping, Guelph, Ontario, July, 1993.
- Haberfeld, Alon, W. Allan King, Naida M. Loskutoff, Robert J. Etches and Ann M. Verrinder Gibbins.** Z-chromosome specific sequences from chicken mitotic metaphase spreads. 8th. North American Colloquium on Domestic Animal Cytogenetics and Gene Mapping, Guelph, Ontario, July, 1993.
- Kagami, H., M.E. Clark, A. Toner, A.M. Verrinder Gibbins and R.J. Etches.** Sexual differentiation of chimeric chickens. Poultry Science Association Annual Meeting, East Lansing, Michigan, July, 1993.
- Liu, G., A. Toner, R.J. Etches and A.M. Verrinder Gibbins.** Culture of chicken blastodermal cells for gene targeting. XVII Int. Congress of Genetics, Birmingham, U.K., August, 1993.
- Otieno, C.J., J.S. Walton and A.M. Verrinder Gibbins.** Expression of the gene encoding a luteinizing hormone-like substance in bovine conceptuses. XVII Int. Congress of Genetics, Birmingham, U.K., August, 1993.
- Haberfeld, A., W.A. King, R.J. Etches and A.M. Verrinder Gibbins.** Isolation of low copy number sequences from the chicken Z chromosome. XVII Int. Congress of Genetics, Birmingham, U.K., August, 1993.
- Liu, Guodong, Ann Toner, Robert J. Etches and Ann M. Verrinder Gibbins.** Proliferation of chicken blastodermal cells in continued culture. 12th. Int. Congress of the Int. Soc. of Developmental Biologists, Vienna, Austria, August, 1993.
- Zimmer, Regis, Alon Haberfeld, W. Allan King and Ann M. Verrinder Gibbins.** Manipulacao genetica do cromossomo Z visando a alteracao da proporcao sexual em galinha domestica. Conferencia APINCO-1994 de Ciencia e Tecnologia Avicolas, Santos, Brazil, May, 1994.
- Otieno, Charles J., John S. Walton and Ann M. Verrinder Gibbins.** Detection of luteinizing hormone alpha- and beta-subunit transcripts in bovine conceptuses by reverse-transcription and polymerase chain reaction. 27th. Annual Meeting of the Society for the Study of Reproduction, Ann Arbor, Michigan, July, 1994.
- Speksnijder, G.J., R.J. Etches and A.M. Verrinder Gibbins.** Fluorescence-activated cell sorting of transfected chicken blastodermal cells prior to injection into recipient embryos. BARC Symposium XX, "Biotechnology's Role in the Genetic Improvement of Farm Animals", Beltsville, Maryland, May, 1995.
- Zimmer, R., and A.M. Verrinder Gibbins.** Construction of a chicken bacterial artificial chromosome library. BARC Symposium XX, "Biotechnology's Role in the Genetic Improvement of Farm Animals", Beltsville, Maryland, May, 1995.
- Liu, Guodong, and Ann M. Verrinder Gibbins.** Targeted insertion of exogenous DNA into the vitellogenin II (*VTGII*) gene in chicken blastodermal cells. Poultry Science Association Annual Meeting, Edmonton, Alberta, August, 1995.
- Speksnijder, G.J., R.J. Etches and A.M. Verrinder Gibbins.** The construction of chimeric chicken embryos using transfected blastodermal cells sorted by FACS. Poultry Science Association Annual Meeting, Edmonton, Alberta, August, 1995.
- Etches, R.J., M.E. Clark, A.M. Verrinder Gibbins and M. Cochran.** Development of chimeric chickens in surrogate shells. Poultry Science Association Annual Meeting, Edmonton, Alberta, August, 1995.

Zimmer, R., W.A. King and A.M. Verrinder Gibbins. Generation of microdissected chicken Z-chromosome painting probes for screening of large-insert genomic libraries. 12th. European Colloquium on Cytogenetics in Domestic Animals, Zaragoza, Spain, June, 1996.

Zimmer, R., and A.M. Verrinder Gibbins. Construction of a chicken BAC library as a source of Z-chromosome specific sequences for gene targeting. 12th. European Colloquium on Cytogenetics in Domestic Animals, Zaragoza, Spain, June, 1996.

Soodeen-Karamath, S., and A.M. Verrinder Gibbins. Search for pluripotential cell markers in the chick embryo. Keystone Symposium "Germ Cell Differentiation", Frisco, Colorado, March, 1997.

Liu, G., G. Lampard, J. Losos and A.M. Verrinder Gibbins. Chimeric chickens from transfected blastodermal donor cells sorted by GFP-mediated fluorescence. Transgenic Animal Research Conference, Tahoe City, California, August, 1999.

Soodeen-Karamath, S., and A.M. Verrinder Gibbins. Analysis of the chicken for genes encoding embryonic stem cell indicators. Transgenic Animal Research Conference, Tahoe City, California, August, 1999.

Lackeyram, D., M.Z. Fan, T. Archbold, T. Rideout, Y. Gao, C. Dewey, T. Smith, D.G. Burrin, X. Chang, A.M. Gibbins, E.J. Squires and X. Yue. Dietary supplementation of synthetic L-threonine differentially affects the gastrointestinal tract and whole body growth in early-weaned piglets fed corn and soybean meal-based diets. 8th International Symposium on Digestive Physiology, Uppsala, Sweden, June, 2000.

Lackeyram, D., M.Z. Fan, T. Archbold, T. Rideout, Y. Gao, M. Borysenko, A.M. Gibbins, E.J. Squires and D.G. Burrin. Effects of early weaning versus suckling on the gastrointestinal tract and whole body growth in neonatal pigs. ASAS Annual Meeting, July, 2000.

Jiang, Z., and A.M. Verrinder Gibbins. Comparative mapping of livestock genomes: construction of cytogenetic banding block counterpart (CBBC) maps. 27th International Conference on Animal Genetics (ISAG 2000), Minneapolis, MN, July, 2000.

Jiang, Z., J.P. Gibson and A.M. Verrinder Gibbins. The relationship of sequence homology between species to within species rate of polymorphism: evidence from 108 pig genes. 27th International Conference on Animal Genetics (ISAG 2000), Minneapolis, MN, July, 2000.

Losos, J., D. Evans and A.M. Verrinder Gibbins. Modification of the complete chicken lysozyme gene domain by poxvirus mediated gene targeting. 27th International Conference on Animal Genetics (ISAG 2000), Minneapolis, MN, July, 2000.

Lampard, Gregory R., and Ann M. Verrinder Gibbins. Secretion of foreign proteins mediated by chicken lysozyme gene sequences. AIC 2001 (Canadian Society of Animal Science Annual Meeting), Guelph, Ontario, July, 2001.

Jiang, Zhihua, Hong He, Noriyuki Hamasima, Hideaki Suzuki and Ann M. Gibbins. Cytogenetic banding block counterpart (CBBC) mapping of *Homo sapiens* chromosome 4 (HSA4) and *Sus scrofa* chromosome 8 (SSC8) using orthologous genes as landmarks. AIC 2001 (Canadian Society of Animal Science Annual Meeting), Guelph, Ontario, July, 2001.

Lackeyram, D., M.Z. Fan, D.G. Burrin, T.K. Smith, E.J. Squires, A.M. Gibbins and C. Dewey. Determination of L-threonine utilization and requirements in the early-weaned piglet. AIC2001 (Canadian Society of Animal Science Annual Meeting), Guelph, Ontario, July 2001.

Melville, Jenna S., Zhihua Jiang and Ann M. Verrinder Gibbins. Cytogenetic banding block counterparts between porcine and human genomes based on 669 orthologous genes mapped in both species. 12th North American Colloquium on Animal Cytogenetic and Gene Mapping, Davis, CA, USA, July, 2001.

Shimizu, Mamiko, J. Losos, G. Lampard and Ann M. Verrinder Gibbins. Modification of the complete chicken lysozyme gene by poxvirus mediated recombination. Transgenic Animal Conference III, Tahoe City, CA, September, 2001.

Jiang, Zhihua, Jenna S. Melville, Honghe Cao, Sudhir Kumar and Ann M. Verrinder Gibbins. Measuring conservation of contiguous sets of autosomal markers on bovine and porcine genomes in relation to the human genome map. Plant, Animal and Microbe Genomes X Conference, San Diego, CA, January, 2002.

Melville, J.S., Z. Jiang, A.M. Verrinder Gibbins, J.A.B. Robinson and J.P. Gibson. A radiation hybrid map of SSC3 using a comparative mapping approach. 28th Conference of the International Society of Animal Genetics (ISAG), Goettingen, Germany, August, 2002.

Ye, X., J.A.B. Robinson, Z. Jiang, A. M. Verrinder Gibbins and J.P. Gibson. Polymorphisms of histone deacetylase 1 and 3 genes and fatty acid binding protein 3 and 4 genes and their associations with economic traits in swine. Proceedings of the 7th World Conference of Genetics Applied to Livestock Production (WCGALP), Montpellier, France, August, 2002, 31:359-362.

Melville, J. S., A.M. Verrinder Gibbins, J.A.B. Robinson, J.P. Gibson, A.L. Archibald, C.S. Haley and Z. Jiang. A Meishan positive QTL for prolificacy traits found at the *NcoA1* locus on SSC 3. Proceedings of the 7th WCGALP, Montpellier, France, August, 2002, 30:733-736.

Jiang, Z., J.A.B. Robinson, A.M. Verrinder Gibbins, J.P. Gibson, A.L. Archibald and C.S. Haley. Mapping of QTL on SSC8 for prolificacy traits using a candidate gene approach. Proceedings of the 7th WCGALP, Montpellier, France, August, 2002, 30:633-636.

Cao, Honghe, Jenna S. Melville, Zhihua Jiang, J. Andrew Robinson and Ann M. Verrinder Gibbins. A high-resolution radiation hybrid map of porcine chromosome 6 relative to human chromosomes 1, 16, 18 and 19. Plant & Animal Genome XI Conference, San Diego, CA, January, 2003.

Verrinder Gibbins, Ann M., Honghe Cao, Jenna S. Melville, Zhihua Jiang, Serguei P. Golovan and J. Andrew B. Robinson. Use of high-resolution radiation hybrid maps of porcine chromosomes 3 and 6 to identify genes associated with prolificacy. XIXth. International Congress of Genetics, Melbourne, Australia, July, 2003.

Verrinder Gibbins, Ann M., and Mamiko Shimizu. Precise modification of the lysozyme gene domain by *poxvirus*-mediated recombination, for eventual expression in transgenic chickens. XIXth. International Congress of Genetics, Melbourne, Australia, July, 2003.

Jun, H.S., K.E. Nelson, M. Morrison, S. Daugherty, W.C. Nelson, P.J. Krell, A.M. Gibbins and C.W. Forsberg. Proteomic analysis of cellulose-grown *Fibrobacter succinogenes*. American Society for Microbiology Annual Meeting, New Orleans, May, 2004.

Extension publications

- Guelph Dairy Research Report

1987:

- N.L. Campbell and A.M. Gibbins, "Construction of diagnostic probes for virulent *Ureaplasma* spp. in bovine semen and embryos".
 D.J. Muysson, A.M. Gibbins and C.W. Forsberg, "Genetic manipulation of the rumen bacterium *Bacteroides succinogenes* to enhance fibre digestion in cattle".

1988:

- D.J. Muysson, W.R. Lawrence, A.M. Gibbins and C.W. Forsberg, "Genetic manipulation of rumen bacteria to enhance fibre digestion in cattle".
 D.J. Muysson and A.M. Gibbins, "The manipulation of milk content by recombinant DNA techniques".

1989:

- D.J. Muysson, A.M. Gibbins and C.W. Forsberg, "Cloning of genes coding for D-xylose isomerase in the rumen bacterium *Bacteroides rumenicola*".
 R.A. van Vliet, A.M. Gibbins and J.S. Walton, "Livestock embryo sexing: a review of current methods, with emphasis on Y-specific DNA probes".
 N.L. Campbell, A.M. Gibbins and H.L. Ruhnke, "Cloning and expression of genes from virulent and avirulent strains of the bovine pathogen *Ureaplasma diversum*".

- The Centre for the Genetic Improvement of Livestock Annual Research Report

1987:

- D.J. Muysson, A.M. Gibbins, C.W. Forsberg, "Genetic manipulation of the rumen bacterium, *Bacteroides succinogenes*, to enhance fibre digestion in cattle".

1988:

- C.M. Forsberg and A.M. Gibbins, "Isolation of the 5' region of the Japanese quail major egg yolk protein gene by recombinant DNA techniques".
 D.J. Muysson and A.M. Gibbins, "An evaluation of the manipulation of milk content by recombinant DNA techniques".
 Guodong, Liu and A.M. Gibbins, "DNA fingerprinting in poultry to assess relatedness between individuals".
 C.L. Brazolot and A.M. Gibbins, "Construction of a truncated egg yolk protein gene for testing transgenic systems in poultry".
 K.F.T. Copeland and A.M. Gibbins, "DNA modification related to egg yolk protein production in poultry".
 D.J. Muysson, A.M. Gibbins, and C.W. Forsberg, "The cloning of genes from the rumen bacterium, *Bacteroides rumenicola*, in a program to enhance fibre digestion in cattle".
 W.R. Lawrence, A.M. Gibbins and C.W. Forsberg, "The design of a shuttle vector to allow transfer of cloned genes into rumen bacteria to enhance fibre digestion in cattle".
 R.A. van Vliet, A.M. Gibbins and J.S. Walton, "Y-specific DNA probes: a new method for livestock embryo sexing".
 N.L. Campbell, A.M. Gibbins and H.L. Ruhnke, "A molecular genetic analysis of *Ureaplasma diversum* strains implicated in bovine reproductive, urinary, and respiratory tract disease".

1991:

- A. Saefuddin, J.P. Gibson, C. Smith and A.M. Gibbins, "Population with transgene under selection: a simulation study".

1993:

C.J. Otieno, J.S. Walton and A.M. Verrinder Gibbins, "*Expression of the gene encoding a luteinizing hormone-like substance in bovine conceptuses.*"

2000:

A.M. Gibbins, "*Transgenic chickens lay future benefits.*"

- **Canada Poultryman**

December, 1987: *Why don't roosters make egg yolk?*

June, 1989: *Do birds have fingerprints?*

June, 1991: *Finding your way around a chicken.*

March, 1995: *Genetic engineering to produce novel products in eggs.*

- **Ontario Milk Producer**

January, 1990: *Genetically-engineered milk* (changed by the journal to "Mice research presages future cows"!!).

March, 1992: *Gene research helps breeding strategies.*

June, 1993: *Mapping genes in dairy cattle.*

- **OMAF "Highlights"**

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- **World Poultry-Misset**

Volume 10, pp.62-65, 1994: *Novel products from genetic engineering of eggs.*

- **Lohmann Information International**, a publication of Lohmann Tierzucht. No. 21, pp. 3-6, 1998, by invitation: *Genetically-engineered poultry* (Ann M. Verrinder Gibbins and Jan Losos).

- **Nuggets** (University of Guelph/OMAFRA Poultry Program newsletter)

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